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EXAMINER

CHEN, SHIH CHAO

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,406

Applicant(s)

RAWNICK ET AL.

Examiner

Shih-Chao Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-23 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 4-5, 8-9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lo (U.S. Patent No. 6,452,549).

Regarding claim 1, Lo teaches in figures 1-5 an array of radiating elements comprising: a first plurality of antenna elements [308] in an array configuration, the first plurality of antenna elements [308] configured for operating on a first band of frequencies; and a second plurality of antenna elements [314] in an array configuration, the second plurality of antenna elements [314] configured for operating on a second band of frequencies; wherein the first plurality of antenna elements [308] are positioned below the second plurality of antenna elements [314], the first plurality of antenna elements [308] acting as an effective ground plane for the second plurality of antenna elements [314] (See col. 6, lines 34-36).

Regarding claim 2, Lo teaches in figures 1-5 the array further comprising a dielectric material [310] interposed between the first plurality of antenna elements [308] and the second plurality of antenna elements [314].

Regarding claim 4, Lo teaches in figures 1-5 the array wherein the first plurality of antenna elements [308] are aligned in a first planar grid pattern of spaced rows and columns and the second plurality of antenna elements [314] are aligned in a second planar grid pattern of spaced rows and columns (See FIG. 1A-1B), the second grid pattern rotated at an angle (i.e. 45 degrees) relative to the first grid pattern.

Regarding claim 5, Lo teaches in figures 1-5 the array wherein the angle is approximately 45 degrees (See col. 5, lines 44-47).

Regarding claim 8, Lo teaches in figures 1-5 the array further comprising a ground plane [302] positioned below the first plurality of antenna elements [308], and a dielectric layer [306] interposed between the ground plane [302] and the first plurality of antenna elements [308].

Regarding claim 9, Lo teaches in figures 1-5 the array wherein the first and second plurality of antenna elements [308, 314] are planar antenna elements.

Regarding claim 12, Lo teaches in figures 1-5 the array wherein at least one of the first and second plurality of antenna elements [308, 314] comprise adjacent dipole antenna elements [314], wherein at least one end portion of each dipole element is capacitively coupled to a corresponding end portion of an adjacent dipole element (See FIG. 3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lo (Cited above) in view of Sievenpiper et al. (U.S. Patent No. 6,483,481).

Lo teaches every feature of the claimed invention except for the first and second feed organizers arranged in a common grid pattern and extending upward toward the first and second plurality of antenna elements and wherein a plurality of RF feeds of the second feed organizers form a second feed organizer grid pattern interposed on the common grid pattern.

Sievenpiper et al. teaches in figures 5-6 the first and second feed organizers [14, 15] arranged in a common grid pattern [12] and extending upward toward the first and second plurality of antenna elements [10, 20] and wherein a plurality of RF feeds of the second feed organizers [15] form a second feed organizer grid pattern interposed on the common grid pattern [12].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the first and second feed organizer as shown in Lo by using the first and second feed organizers arranged in a common grid pattern and extending upward toward the first and second plurality of antenna elements and wherein a plurality of RF feeds of the second feed organizers form a second feed organizer grid pattern interposed on the common grid pattern as taught by Sievenpiper et al. in order to perform the second array having a lattice constant greater than the lattice constant of the first array (See Abstract).

5. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lo (Cited above) in view of Taylor et al. (U.S. Patent No. 6,512,487).

Lo teaches every feature of the claimed invention except for at least one of the first and second plurality of antenna elements comprise: an elongated body portion; and an enlarged width end portion connected to an end of the elongated body portion, wherein the enlarged width end portions of adjacent ones of the antenna elements comprise interdigitated portions.

Taylor et al. teaches in figures 3-5 at least one of the first and second plurality of antenna elements [40] comprise: an elongated body portion [49]; and an enlarged width end portion [51] connected to an end of the elongated body portion [49], wherein the enlarged width end portions [51] of adjacent ones of the antenna elements comprise interdigitated portions [47].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the array of dipole antenna elements shown in Lo by using at least one of the first and second plurality of antenna elements comprise: an elongated body portion; and an enlarged width end portion connected to an end of the elongated body portion, wherein the enlarged width end portions of adjacent ones of the antenna elements comprise interdigitated portions as taught by Taylor et al. in order to be used in the wideband phased array antenna (See Abstract).

Allowable Subject Matter

6. Claims 13-23 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither teach nor make it obvious the claimed limitation of the instant application as a whole as recited in claim 13. In particular, the prior art does not teach or suggest the first and second feed organizers arranged in a common grid pattern and extending upward toward the first and second plurality of antenna elements and wherein a plurality of RF feeds of the second feed organizers form a second feed organizer grid pattern interposed on the common grid pattern. The dependent claims are allowable for at least the above reason.

The prior art of record neither teach nor make it obvious the claimed limitation of the instant application as a whole as recited in claim 19. In particular, the prior art does not teach or suggest a second plurality of planar antenna elements comprising elongated second body portions and enlarged width second end portions connected to correlating ends of the second body portions, and the second end portions of adjacent ones of the second antenna elements comprising interdigitated portions. The dependent claims are allowable for at least the above reason.

Response to Arguments

8. Applicant's arguments filed April 28, 2003 have been fully considered but they are not persuasive.

In response to applicant's argument in claim 1 that the adjacent positioning of the frequency bands in applicants' invention allows applicants' array to provide practically continuous frequency coverage over an exceptionally wide frequency range in a single

compact package, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-Chao Chen whose telephone number is (703)

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306-2721. The examiner can normally be reached on Monday-Friday from 7 AM to 4:30 PM, First Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (703) 308-4856. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Shih-Chao Chen
Examiner
Art Unit 2821

SXC
September 4, 2003


Don Wong
Supervisory Patent Examiner
Technology Center